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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/655,143

09/04/2003

Beverly A. Rzigalinski

UCF-375

6531

23717

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08/21/2007

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EXAMINER

CARTER, KENDRA D

ART UNIT

PAPER NUMBER

1617

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/655,143	Applicant(s) RZIGALINSKI ET AL.	
	Examiner Kendra D. Carter	Art Unit 1617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 June 2007.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 2 and 23-27 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2 and 23-27 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

### **DETAILED ACTION**

The Examiner acknowledges the applicant's remarks and arguments of June 12, 2007 made to the office action filed March 20, 2007. Claims 2 and 23-27 are pending. Claim 2 is amended and claims 23-27 are new. Claims 1 and 3-22 are cancelled.

The Applicant's arguments of the 35 U.S.C. 103(a) rejection of claim 2 as being unpatentable over Kropf et al. (US 6,368,577 B1) in view of Shui et al. (Experimental Eye Research, December 2000, vol 71(6), pp. 609-618) were found not persuasive, and thus upheld.

Due to the amendments and addition of new claims, the modified 35 U.S.C. 103(a) rejection is made below.

The Applicant's arguments are addressed below.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2 and 23-~~27~~ are rejected under 35 U.S.C. 103(a) as being unpatentable over Kropf et al. (US 6,368,577 B1) in view of Shui et al. (Experimental Eye Research, December 2000, vol 71(6), pp. 609-618).

Kropf et al. teaches a composition used for blocking the penetration of UV radiation comprising (see abstract, lines 1-2) inorganic light-blocking pigments that are finely dispersed metal oxides (i.e ultra fine) such as cerium oxide with a mean diameter of less than 100 nm, preferably between 5 and 50 nm (see column 8, lines 29-32 and 34-36). To prevent the nanoparticles from agglomerating, it is advisable to dissolve the starting materials in the presence of suitable protective colloids or emulsifiers and/or to expand the critical solutions into aqueous emulsifiers or into cosmetic oils which may in turn contain redissolved emulsifiers and/or protective colloids (see column 2, lines 60-66). The compositions are suitable for topical application (see column 3, line 48) in sunscreen compositions (see column 12 and 13, table 2).

Kropf et al. does not teach a method of enhancing the longevity of cultured living cells. The properties/function (i.e. regenerative free radical scavenger; plurality of oxygen vacancies in a lattice structure) of the cerium oxide particles as disclosed in claims 2 and 23-27 is not taught. Also, the specific teaching of a single application is not taught.

Shui et al. teaches the morphological observation on cell death and phagocytosis induced by ultraviolet irradiation in cultured human lens epithelial cells (see title). The cell viability was stained (see abstract lines 10 and 11) and found that UV irradiation causes both apoptosis and necrosis of the cell line (see abstract lines 11, 17 and 18).

To one of ordinary skill in the art at the time of the invention would have found it obvious to combine the composition of Kropf et al. and a method to enhance the longevity of cultured living cells because Shui et al. teaches that UV irradiation causes both apoptosis and necrosis of the cell line (see abstract lines 27 and 28). Thus, it would be obvious to add a known UV protectant (i.e. ultra fine engineered nanoparticles of cerium oxide) to help prevent UV from affecting the cell.

Therefore, one would be motivated to combine the non-agglomerated ultrafine engineered nanoparticles of cerium oxide to protect the cultured cells from apoptosis or/and necrosis, hence enhancing the longevity.

In regards to the properties/function of the engineered nanoparticles of cerium oxide as disclosed in claims 2 and 23-27, these properties/function are inherent because Kropf et al. teaches the nanoparticles of cerium oxide of the size approximately 2 to approximately 10 nm. Where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or

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substantially identical processes, a prima facie case of either anticipation or obviousness has been established. Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977).

To one of ordinary skill in the art at the time of the invention would have found it obvious and motivated to combine Kropf et al. in view of Shui et al. and a single application of the nanoparticles because the compositions of Kropf et al. are used in sunscreen compositions (see column 12 and 13, table 2), which to one skilled in the art, is applied at least once a day. In regards to the properties/function of the nanoparticles once applied, they are inherently taught as discussed above.

### ***Response to Arguments***

Applicant's arguments filed June 12, 2007 have been fully considered but they are not persuasive.

The arguments addressing the remarks to the office action filed March 20, 2007 are addressed below and not those of the amended claims and new claims filed June 12, 2007.

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35 USC 103(a) rejection

The Applicant argues that Shui et al. does not teach the antithesis of the Applicant's invention, which is keeping living cells alive and enhancing the longevity by preventing free radical induced damage from a variety of sources, such as aging, sunlight (UV irradiation), injury and the like.

The Examiner disagrees because the combination of Kropf et al. and Shui et al. teach the antithesis of the Applicant's invention. Kropf et al. teaches the nanoparticles of cerium oxide of the size approximately 2 to approximately 10 nm that is used in a UV protection formula. Shui et al. teaches that UV irradiation causes both apoptosis and necrosis of the cell line (see abstract lines 11, 17 and 18). Thus to one skilled in the art, it would be obvious to enhance the longevity of a living cell by protecting it from UV irradiation, since UV irradiation causes cell death.

The Applicant argues that neither Kropf et al. or Shui et al teach a method for enhancing longevity and find the Examiner's hindsight arguments untenable that "...it would be obvious to add a known UV protectant ... to help prevent UV from affecting the cell." The Examiner has assumed that Applicants are using the cerium oxide as a UV protectant, not as a material with a newly discovered property as a regenerative free-radical scavenger.

The Examiner disagrees because although the exact wordage "enhancing longevity of cultured living cells" is not taught, the combination of Kropf et al. and Shui et al. teach the method as discussed above. There is not hindsight in combining the two references for the method because Shui et al. teaches that cells die upon being

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exposed to UV irradiation. Thus, protecting the cells from UV irradiation with the composition of Kropf et al. would obviously enhance the longevity (i.e. life) of the cell. In regards to the function/properties of cerium oxide, where the claimed and prior art products are identical or substantially identical in structure or composition, or are produced by identical or substantially identical processes, a prima facie case of either anticipation or obviousness has been established. Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195

The Applicant argues that there is an impermissible assumption that preventing death is equivalent to prolonging life. There can be an infinite number of methods for preventing death and there can be an infinite number of methods for prolonging life and each methodology can be innovative and distinct.

The Examiner disagrees because, while there may be infinite number of methods for preventing death and prolonging life, the relationship between the two concepts affect each other. In other words, by preventing death, one is inevitably prolonging life. In the present case, enhancing the longevity of living cells is by applying nanoparticles of cerium oxide, which function as a regenerative free radical scavenger. The Examiner has provided teachings by Kropf et al. of the Applicant's same cerium oxide nanoparticles that function as a UV protectant but not as a regenerative free radical scavenger. Thus as stated above, claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. In re Best, 562 F.2d 1252, 1254, 195.



***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

No claims are allowed. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kendra D. Carter whose telephone number is (571) 272-9034. The examiner can normally be reached on 8:30 am - 5:00 pm.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sreeni Padmanabhan can be reached on (571) 272-0629. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

KDC



SREENI PADMANABHAN  
SUPERVISORY PATENT EXAMINER